Appendix B

Methodology:
Selecting and Aggregating Census Block Groups to Human Geographic Units

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Human geographic units offer the advantage of identifying the "sense of place" with which local people identify. They are the cultural areas within which many of the daily routines of everyday life take place. For this reason, and because Arizona counties are so large, there is advantage in corresponding available census data with local human geography so that data interpretation is more meaningful and the diversity within a region is revealed.

The project area is a 14,500 square mile region of Arizona including the southern portion of Yavapai County and the northern portion of Maricopa County. This study area is more specifically defined as the Buckeye Valley, Lake Pleasant, Phoenix, Prescott, and Wickenburg Human Resource Units (HRUs) as previously defined by James Kent Associates. Within those HRUs are smaller Community Resource Units (CRUs), which are cultural areas nested within their containing HRUs. These 5 HRUs and 11 CRUs define our study area (see Figure Two, Chapter One).

Boundaries for these cultural areas are then compared to the boundaries for Block Group units of geography as defined by the US Census Bureau. Block Groups (BGs) are the smallest unit of geography for which extensive census data are available, and as such are useful building blocks for estimating the demographic characteristics of cultural areas.

The methodology for selecting and aggregating BGs to the HRU and CRU levels is a two-step process. First, BGs are selected for inclusion if their geographic centroid falls within the boundary of one of the five HRUs under study. The BGs selected in this step are illustrated in the HRU maps that accompany census tables in the Appendices.

Scanning of the perimeter of the study area was conducted in order to identify and then review the inclusion or exclusion of marginal BGs. No exceptions to the centroid rule were found, so the BGs identified in the above illustration were determined to be the best approximation of the HRUs involved.

While the majority of BGs are contained within Maricopa and Yavapai counties, a small number of BGs located within La Paz and Pinal counties meet the centroid rule and have been included in the study area. Those BGs are discussed and illustrated below:

1. Wickenburg HRU. The westernmost portion of the Wickenburg HRU (and the Aguila CRU) includes La Paz County, Tract 201, BG 1.

2. Buckeye Valley HRU. The southeastern portion of the Buckeye Valley HRU (and the Buckeye Valley CRU) includes Pinal County, Tract 9410, BGs 1 and 2.

3. Phoenix HRU. The easternmost portion of the Phoenix HRU includes Pinal County, Tract 304, BGs 1, 3, 4, and 5; and Tract 306, BG 1.

The second step in selecting and aggregating BGs to cultural areas involves examination of those BGs that span two or more CRUs. These BGs must be assigned as whole units to one or the other cultural areas involved which it spans. While splitting BGs to precisely correspond to the boundaries of cultural areas is beyond the scope of this project, incorporated place and census designated place (CDP) boundaries and census data can be used to modify whole BG totals. Below is a discussion of those marginal BGs that span two or more CRUs:

1. Black Canyon City. The population characteristics for the Black Canyon City CDP were subtracted from the totals for Yavapai County, Tract 14, BG 4 and added to the totals for Yavapai County, Tract 303.29, BG 1.

2. Congress City. Yavapai County, Tract 14, BG 1 contains the Congress settlement area, which is defined as a Census Designated Place (CDP) for the 2000 census, but was not defined as such for the 1990 census. For purposes of the present study this BG is assigned to the Aguila CRU even though the Congress settlement area is contained within the Yarnell CRU. While it is possible to measure and then subtract the 2000 population characteristics of the Congress CDP from Tract 14, BG 1, there is no comparable geographic entity measured for Congress for the 1990 census. Since the analysis is built around comparisons between the 1990 and 2000 censuses, no attempt has been made to adjust the Congress population.

3. Wickenburg City. Maricopa County, Tract 405.02, BGs 1, 2, 3, and 4 are the best approximation of Wickenburg City. Tract 405.09, BG 3 and 4 are both large BGs with low population, with small portions of each BG located within the Wickenburg incorporated limits. Approximately 400 residents of Wickenburg City's total population of 5,082 reside in either these large BGs, which have populations of 2,900 and 2,100 respectively. BGs 3 and 4 of Tract 405.09 properly belong to the Buckeye Valley HRU, so the above estimation technique probably undercounts the Wickenburg HRU population characteristics by 400 residents.

4. Castle and Wickenburg CRUs. The sparsely populated Castle and Wickenburg CRUs are difficult to approximate using BGs. Yavapai County, Tract 14, BGs 3 and 5 do not reasonably conform to the two CRUs, so it was decided that a combined statistical area, the Castle-Wickenburg CRU, would be created for purposes of the quantitative analysis.

The above allocations and aggregations of BGs result in operational definitions of the five HRUs and ten CRUs under study. The next step in the measurement process involves applying those operational definitions to databases containing 1990 and 2000 census data.

Census data at the block group level are available for the 1990 and 2000 censuses, with two data files available for each census year. One file includes variables based on 100% count data (STF1A and SF1, respectively); the other includes variables based on sample data (STF3A and SF3, respectively).

In order to depict 1990 to 2000 changes in census variables an analytic template developed by Tetrad Computer Applications was obtained. This template was used to produce the structure of 1990 to 2000 comparisons found in the Appendices.

This template was also used to ascertain 1990 to 2000 population patterns for the incorporated places (cities) located within the five HRUs. Several of the so-called places are unincorporated areas defined by the Census Bureau as Census Designated Places (CDPs).

Several federal agencies and numerous private sources collect information at the county level of geography. Although not as precise as block groups in approximating HRU boundaries, county data can be utilized to provide additional insight into demographic and economic patterns within the study area. The data tables in the Appendices also include county level information that can be compared to the HRU and CRU data on the same page. In addition, Part Three of the data tables consists of county-level information gleaned from non-census sources including the Bureau of Economic Analysis, Department of Justice, and Department of Agriculture.

The data tables are a compilation of demographic and statistical information aggregated to the HRU and CRU levels of geography, with inclusion of statistical information at the County and Place units of geography. Information has been organized in a consistent manner for ease of use and comparison.